

# First ornithological inventory and conservation assessment for the yungas forests of the Cordilleras Cocapata and Mosetenes, Cochabamba, Bolivia

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## Summary

Bolivia holds one of the world's richest avifaunas, but large areas remain biologically unexplored or unsurveyed. This study carried out the first ornithological inventory of one of the largest of these unexplored areas, the yungas forests of Cordilleras Cocapata and Mosetenes. A total of 339 bird species were recorded including 23 restricted-range, four Near-Threatened, two globally threatened, one new to Bolivia and one that may be new to science. The study extended the known altitudinal ranges of 62 species, 23 by at least 500 m, which represents a substantial increase in our knowledge of species distributions in the yungas, and illustrates how little is known about Bolivia's avifauna. Species characteristic of, or unique to, three Endemic Bird Areas (EBAs) were found. The Cordilleras Cocapata and Mosetenes are a stronghold for yungas endemics and hold large areas of pristine Bolivian and Peruvian Upper and Lower Yungas habitat (EBAs 54 and 55). Human encroachment is starting to threaten the area and priority conservation actions, including designation as a protected area and designation as one of Bolivia's first Important Bird Areas, are recommended.

## Introduction

Bolivia holds the richest avifauna of any landlocked country. With a total of 1,398 species (Hennessey *et al.* 2003), it contains 14% of all bird species, making Bolivia one of the most species-rich countries in the world (Wege and Long 1995). In a global context many of these species are restricted to very small areas and their populations are, therefore, extremely vulnerable to disturbance and habitat destruction (Ridgely and Tudor 1989). Within Bolivia large areas remain unexplored biologically, due to the logistical difficulties of accessing remote and steep terrain. The largest and most important of these gaps in knowledge (verbally B. Hennessey, Bolivian Important Bird Area Co-ordinator) is the 80,000 km<sup>2</sup> of yungas forest that lie between the renowned Madidi National Park and Serranía Pilon to the north-west and the Carrasco-Amboro National Parks area to the south-east along this section of the Andes (Fig. 1).

The yungas habitat is one of the characteristic vegetation zones of the eastern slope of the Andes, extending from south-west Peru through La Paz, Cochabamba and into the Santa Cruz department of Bolivia. This area of extremely steep slopes and high rainfall holds montane and submontane forest, at altitudes ranging from 400 m to 3,700 m (Stattersfield *et al.* 1998). Much of the yungas situated within Bolivia



Figure 1. Location of the yungas forests of Cordilleras Cocapata and Mosestenes, Department of Cochabamba, Bolivia. 1, Madidi National Park; 2, Pilon-Lajas Reserve; 3, National Parks of Carrasco and Amboro; 4, Cordillera de Mosestenes; 5, Cordillera de Cocapata.

comprises the transitional zone between humid tropical forest found on lower Andean slopes and valleys, and elfin forest located at higher altitudes (Stattersfield *et al.* 1998, Ridgley and Tudor 1989).

Before survey work commenced, the area from the east side of Cordillera Cocapata to the Cordillera de Mosestenes was predicted to hold extensive pristine habitat (Herzog *et al.* 1999) representative of three of Bolivia's five EBAs (EBA 54 the "Bolivian and Peruvian Lower Yungas", EBA 55 "Bolivian and Peruvian Upper Yungas" and EBA 56 "High Andes of Bolivia and Argentina", Stattersfield *et al.* 1998). Based on the information presented by Stattersfield *et al.* (1998) it was predicted that 30 of the country's 68 restricted-range bird species might be found in the area. The primary objective of our study was to conduct a comprehensive ornithological survey that would establish the avian species richness of the area. These data would allow assessment of the area's importance in conserving Bolivia's threatened and restricted-range bird species and the appropriateness of nominating it as an Important Bird Area (IBA). In combination with this ornithological study, detailed herpetological and entomological inventories were performed, the results of which will be published elsewhere.

### Study area

The study was carried out on the east side of the Cordillera de Cocapata and at the western base of the Cordillera de Mosestenes, Cochabamba, Bolivia between 2 August and 19 September 2001 as part of the Yungas 2001 expedition. These mountain

ranges, which form part of the eastern Andean slope, are located in the Cuzco-Cochabamba subregion of the Central Andes zoographic region (Stotz *et al.* 1996). Within this area work focused on the Rio Pampa Grande and Rio Altamachi valleys.

The fieldwork covered an altitudinal range from 1,100 m to 4,100 m, mainly within undisturbed and disturbed primary montane evergreen forest (Stotz *et al.* 1996). Areas of greater disturbance, including secondary forest and a few areas cleared for grazing, were also found within the study area. Inventory work focused on a comprehensive survey of the forest habitats in the Rio Pampa Grande valley ( $16^{\circ}39.9'S$   $66^{\circ}29.1'W$ ) between altitudes of 1,800 m and 2,600 m, with a main camp at 2,110 m and short camps at 1,850 m and 2,550 m. This was supplemented by rapid assessment surveys from 2,600 m to the treeline ( $16^{\circ}42.3'S$   $66^{\circ}28.9'W$ ) at 3,200, 3,300 m and near the confluence of the Pampa Grande and the Rio Altamachi rivers at the base of Cordillera Mosetenes ( $16^{\circ}24.3'S$   $66^{\circ}19.7'W$ ) between 1,100 m and 1,250 m. Limited survey work was also carried out in puna habitat up to 3,600 m in the Rio Pampa Grande valley and up to 4,100 m on the Tunari Highland during entry to and exit from the study area. The terrain of the area was a mixture of flat, wide valley bottoms and steep valley sides.

## Methods

Systematic avian inventories were conducted primarily using visual and audio identification, supplemented in the Pampa Grande valley with occasional mist-netting. In the field, visual identification was based on standard field guides, including Ridgely and Tudor (1989 and 1994) and Fjelds  and Krabbe (1990). Visual identifications were made using binoculars and supported by field notes, sketches and photographic evidence. Audio identification was based on extensive use of sound recording and play-back techniques (Parker 1991). In addition sound recordings (Mayer 2000, McCormick and MacLeod 2000) were used for reference in the field.

Quantification of effort is important in allowing comparison of species inventories from different studies (Remsen 1994). For this study, a team of six ornithologists, four with previous experience working in the Bolivian yungas and two with other South American experience, performed the ornithological inventory work using sound-recording equipment. Inventory work began before first light (~06h15) with sound recording of the dawn chorus and continued throughout the morning until about midday, and continued from 16h00 until dusk. Additional night survey work was carried out on 15 occasions (34% of the survey nights). A mixture of newly cut trails, an existing path and dry riverbeds were used as transects covering the complete range of microhabitats in the survey area. Inventory effort for the different altitudes was (a) 1,800–2,600 m: 30 field days by six observers along 10 km of transects between 2 August and 19 September, (b) 2,600–3,000 m: 5 days by two observers along 1 km of transects between 6 and 12 September; (c) 3,000–3,300 m: 4 days by three observers along 1 km of transects between 14 and 19 September, (d) 1,100–1,250 m: 5 days by three observers along 2.5 km of transects between 6 and 10 September.

## Results

In total, 339 bird species were registered in the Rio Pampa Grande and Altamachi valleys, across an altitudinal range of 1,100–4,100 m (see Appendix for a list of all

species, along with altitudinal ranges and habitat associations). At the principal survey site, the Rio Pampa Grande (1,800–2,600 m), 211 species were registered. At the Rio Altamachi (1,100–1,250 m), 129 species were registered, 81 of which were not registered at the Rio Pampa Grande. Above 2,600 m, 117 species were registered, including 41 species that were not found below 2,600 m. Of these, 108 were associated with high-altitude Upper Yungas or treeline habitats and 15 with puna grasslands.

Species richness showed an overall decline at the Rio Pampa Grande site with increasing altitude. The number of species recorded within successive 200 m altitudinal bands (i.e. 1,800–1,999 m, 2,000–2,199 m, 2,200–2,399 m and 2,400–2,599 m) were 132, 155, 126 and 101, respectively. The maximum in the 2,000–2,199 m band was certainly due to the location of the main camp in this band. In comparison, above 2,600 m species counts were only one-half of that observed at lower altitudes (see Appendix). However, this highlights differences in survey effort over various altitudinal bands as much as it does a biological trend for reduced species diversity at higher altitudes.

#### *Species of special conservation concern*

In total, the expedition identified 26 species in the study area that were of special conservation concern because of their restricted range and or threatened status (see Appendix). Of these, two (Scimitar-winged Piha *Lipaugus uropygialis* and Yungas Antwren *Myrmotherula grisea*) are globally threatened being categorized as Vulnerable, the Piha is also a restricted-range species, and a further four are Near Threatened (Andean Condor *Vultur gryphus*, Cloud-forest Screech Owl *Otus marshalli*, Hooded Mountain-Toucan *Andigena cucullata* and Line-fronted Canastero *Asthenes urubambensis*; the latter three are also restricted-range species) (BirdLife International 2000). The remaining 20 species of special conservation concern are restricted-range species. We found 24 restricted-range species, 10 of which were representative of the Bolivian and Peruvian Lower Yungas (EBA 54), and 11 characteristic of the Bolivian and Peruvian Upper Yungas (EBA 55). Additionally two represented the High Andes of Bolivia and Argentina (EBA 56) and one, Cloud-forest Screech Owl, had only previously been recorded in the Peruvian East Andean Foothills (EBA 53).

In addition, the expedition recorded 59 species that were ‘indicator’ species of good-quality habitat, i.e. those whose presence indicates the integrity of the surrounding environment and whose absence suggests that habitat degradation has occurred (Stotz *et al.* 1996). Of these, 49 were indicative of good-quality montane evergreen forest (20 for the upper tropical zone, 15 for midmontane zone and 14 for the upper montane to treeline zone), seven of bamboo-dominated forest and three of humid broadleaf forest (see Appendix).

#### *Distributional and altitudinal range extensions*

The expedition documented the first record for Bolivia of Cloud-forest Screech-Owl *Otus marshalli*, previously known only from a small region in south-east Peru (see Species accounts). In addition, the altitudinal ranges of 62 species (18% of the total observed) were extended beyond the most recently published known distributions at the time of the study (e.g. Armonia 1995 and subsequent literature accounts on the Bolivian avifauna such as Herzog *et al.* 1999). These distributional records have been

included in the new checklist of Bolivian birds (Hennessey *et al.* 2003). Of these, 61 were documented above published ranges while one (*Uropsalis Segmentata*) was found below. For 23 of these species known altitudinal ranges were extended by more than 500 m. The Appendix lists habitat and altitudinal distributions for each species observed and those whose ranges have been extended are highlighted.

### *Species accounts*

#### Andean Condor *Vultur gryphus*

Observed frequently flying over the puna grassland above the treeline, groups of up to three individuals of this Near-Threatened species were seen.

#### Stripe-faced Wood-quail *Odontophorus balliviani*

This species was occasionally seen and frequently heard throughout the expedition over an altitudinal range of 2,000–3,300 m, this was 300 m higher than this restricted-range species had previously been found in Bolivia (Armonia 1995). The observations were documented by sound recordings made at 3300 m.

#### Cloud-forest Screech-owl *Otus marshalli*

This is a little-known species recently described from specimens obtained on the Cordillera Vilcabamba in south-east Peru (Weske and Terborgh 1981). We document the first recorded observations of a species matching this description in Bolivia, and in EBA 54 it was found to be relatively common over an altitudinal range of 2,150–2,600 m. The first individual was located and sighted on 24 August 2001, when several recordings of the owl's song were made. A male was then captured on 31 August in mist-nets and taken as a specimen. This specimen matched the published description of Cloud-forest Screech-owl (Weske and Terborgh 1981) and was identified on this basis. However, there are no confirmed recordings of vocalizations of this species from Peru with which to compare our recordings. A full description of the specimen and the owl's vocalizations will be published elsewhere.

#### Hooded Mountain-toucan *Andigena cucullata*

Frequent sightings and several sound recordings were made of this Near-Threatened species between 2,400 m and the treeline at 3,300 m. At the relevant altitudes it was common in the Rio Pampa Grande valley.

#### Line-fronted Canastero *Asthenes urubambensis*

This Near Threatened species was seen rarely in puna grassland above the treeline at between 3,200 m and 3,400 m.

#### Yungas Antwren *Myrmotherula grisea*

This Vulnerable species was heard on one occasion by S. K. H. during our 5-day rapid assessment of the Rio Altamachi valley at an altitude of 1,250 m.

Rufous-faced Antpitta *Grallaria erythrotis*

This Bolivian endemic was heard and its song recorded between 2,000 m and 3,300 m. This represents an increase in the known upper altitudinal distribution of 300 m (Armonia 1995).

Scimitar-winged Piha *Lipaugus uropygialis*

This Vulnerable species was found to be uncommon in the Rio Pampa Grande valley. Groups of two to four individuals were observed on five occasions, all within the same altitude band of 2,400–2,600 m. A group of four individuals was observed on the 22 August 2001 and tape-recordings were made of the group's vocalizations. This represents, to our knowledge, the first verified sound recordings of the species. A full description of vocalizations and behavioural observations will be published elsewhere (Bryce *et al.* 2005).

Hazel-fronted Pygmy-tyrant *Pseudotriccus simplex*

This restricted-range species characteristic of EBA 54 was frequently heard and occasionally seen between 1,800 m and 2,500 m, representing an increase in known altitudinal range in Bolivia of 500 m (Armonia 1995). The range extension was documented by sound recordings.

White-bellied Pygmy-tyrant *Myiornis albiventris*

This species was observed both during the rapid assessment at the Rio Altamachi at 1,100 m and also at 1,900 m. This represents an altitudinal range extension of 700 m, as previous published altitude ranges document the species occurring to 1,200 m only (Armonia 1995). At Rio Altamachi, the White-bellied Pygmy-tyrant was relatively common and at 1,900 m it was uncommon.

Yungas Tody-tyrant *Hemitriccus spodiops*

This Bolivian endemic was occasionally observed, frequently heard and calls recorded from 1,800 m to 2,200 m, representing an increase of 600 m of its known upper altitudinal distribution (Armonia 1995). The species was found in scrub, secondary forest and on the edge of disturbed primary forest habitats but not in undisturbed primary forest.

Unadorned Flycatcher *Myiophobus inornatus*

This restricted-range species characteristic of EBA 54 was occasionally seen and frequently heard from 1,800 m to 2,550 m. The known altitudinal range was raised by 550 m and documented by sound recordings.

Rufous-bellied Bush-tyrant *Myiotheretes fusciorufus*

Relatively common below the treeline at 3,200 m, several individuals were observed and recordings were made of vocalizations. This is a 300 m extension to the previously recorded altitudinal range of this restricted-range species (Armonia 1995).



*Little Ground-tyrant Muscisaxicola fluviatilis*

A pair with newly fledged young was found at 1,900 m on the edge of an open area of approximately 10 ha, cleared for farming but still surrounded by montane evergreen forest. This small tyrant is more normally found on the sandy banks of Amazonian rivers so both the altitude and location seem extremely unusual (Armonia 1995). One specimen was collected and deposited at the Colección Boliviana de Fauna, La Paz.

*Slaty Tanager Creurgops dentata*

Observed on a couple of occasions in primary forest between 2,400 m and 2,550 m, this represents a raising of the species' known altitudinal range by 350 m (Armonia 1995).

*Diglossa* sp.

An all-black flowerpiercer was observed on two separate occasions, by different observers, foraging in mixed flocks in the upper canopy. Both observations occurred between 2,300 and 2,400 m in secondary forest on a somewhat drier ridge and on the edge of disturbed primary forest. Similar sightings of an all-black flowerpiercer have been documented from the south-western Cordillera Cocapata, and it is postulated that these sightings are of an undescribed taxon endemic to this part of the yungas (Herzog *et al.* 1999). During one of the observations, a Masked Flowerpiercer *Diglossopsis cyanea* was watched foraging close to the all-black flowerpiercer, thus allowing direct comparison of the two species. The all-black flowerpiercer appeared smaller than the Masked Flowerpiercer – perhaps more similar in dimensions to Moustached Flowerpiercer *Diglossa mystacalis*. We were unable to collect specimens or obtain recordings of the flowerpiercer's vocalizations.

**Assessment of conservation importance**

The Bolivian and Peruvian Upper Yungas (EBA 55) holds 20 restricted range species and 16 of these are known from Bolivia. From a total of 13 predicted to occur within the study area based on geographic distribution, we observed 11, representing 85% of these upper yungas endemics. To discover such a wealth of diversity in a single valley is an impressive testament to the conservation importance of the Cocapata and Mosestenes area. The discovery of an apparently healthy population of Cloud-forest Screech-owl, a restricted-range species not previously recorded in Bolivia or this EBA, adds significantly to the conservation importance of the area. Of even greater interest is the observation of the flowerpiercer species that is probably new to science (Herzog *et al.* 1999). Should this species, once formally described, be confirmed as an endangered Bolivian Yungas endemic – possibly even an endemic of the Cordillera Cocapata – it will make the establishment of a formal reserve to protect the area an even more fundamental conservation priority. The Bolivian and Peruvian Lower Yungas (EBA 54) holds 15 restricted-range species, 13 of which are known from Bolivia and thus had the potential to be recorded the study area. That 10 (77%) of these lower yungas endemics were found in the survey area again highlights that Cocapata and Mosestenes are a major stronghold of yungas avifauna and, as such, deserve protection.

The High Andes of Bolivia and Argentina (EBA 56) holds 21 restricted species in four habitat types (semi-humid forest, *Polylepis* forest, dry scrub and grassland). Only the four species of semi-humid mountain forest/scrub were thought likely in the surveyed area, with a further five species thought possible if there was extensive *Polylepis* woodland at higher altitudes. The limited survey work above 3,000 m found two of these high Andean species, one of which (Grey-bellied Flowerpiercer *Diglossa carbonaria*) also inhabits the upper yungas. Given the habitat observed, but which could not be surveyed due to time constraints, it is likely that a full survey of this area would reveal a considerable number of additional High Andean EBA species. Inclusion of this habitat in any proposed protected area would be important to protect the treeline from further depression and to ensure the preservation of a continuous cross-section of Andean habitats.

During the expedition a number of significant threats to the area were observed. These included selective commercial logging along the Rio Altamachi, burning of the treeline to clear forest for grazing and an influx of subsistence farmers searching the upper reaches of the Pampa Grande for land that could be cleared for farming. Other human impacts observed were a limited amount of hunting, dynamite fishing and subsistence farming along the upper part of the Rio Pampa Grande. Currently the four families living in the valley have no significant impact on the area as a whole. As their presence discourages other settlers they could be a positive influence in future plans to conserve the area.

### Conclusions and conservation recommendations

This study of the birds of the Rio Pampa Grande and Rio Altamachi valleys confirms the predictions that the Cordilleras Cocapata and Mosestenes are a stronghold for yungas avian endemics. The diversity and species richness of the avifauna, combined with the large number of endemic species found, make this area of major conservation importance. The whole Cocapata/Mosestenes area is of special significance because it represents a critical link in the Vilcabamba–Amoró Biodiversity Corridor that is designed to help conserve one of the world's most important biodiversity hotspots. These cordilleras hold extensive habitat from three of Bolivia's five Endemic Bird Areas, making them one of the most important areas for bird conservation in Bolivia and of major significance in terms of global bird conservation.

On the basis of these facts and the data collected by the Yungas 2001 Expedition the following recommendations are made. (1) The forests of the Cordilleras Cocapata and Mosestenes should be designated a fully protected area receiving the highest level of protection possible. (2) Commercial timber extraction should be prevented and the illegal selective logging currently under way out of Covendo along the Rio Altamachi should be investigated and stopped. (3) The area should be designated as one of Bolivia's first Important Bird Areas. (4) The few families currently living on the fringes of the Rio Pampa Grande valley should be allowed to continue making a living in the area as they are potentially important allies in ensuring that further human encroachment is limited. (5) The importance of Cordilleras Cocapata and Mosestenes as a vital part of plans to conserve and protect Bolivia's biodiversity should be recognized. Specifically, the conservation of this area should be considered at least as important as the great national parks of Madidi and Carrasco in protecting the globally important yungas forests of the Andes.



Appendix. Bird species distributions in the valleys of the Rio Pampa Grande and Rio Altamachi

English name	Latin name	Habitats					Altitudes					Status	Range extension		
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+				
Grey Tinamou	<i>Tinamus tao</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Hooded Tinamou	<i>Nothocercus nigrocapillus</i>	1	1	0	0	0	0	1	1	1	1	0	0	IND-MM	33 (30)
Little Tinamou	<i>Crypturellus soul</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Brown Tinamou	<i>Crypturellus obsoletus</i>	1	1	0	1	0	0	1	1	1	0	0	0		
Huayco Tinamou	<i>Rhynchotus maculicollis</i>	0	0	0	0	1	0	0	0	0	1	0	0		
Neotropical Cormorant	<i>Phalacrocorax brasilianus</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Fasciated Tiger-heron	<i>Tigrisoma fasciatum</i>	0	0	0	0	0	1	1	1	0	0	0	0		
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	0	0	0	0	1	0	0	0	0	0	1	0		
Torrent Duck	<i>Merganetta armata</i>	0	0	0	0	0	0	1	0	0	0	0	0		
Speckled Teal	<i>Anas flavirostris</i>	0	0	0	0	0	0	0	0	0	0	0	1		
Turkey Vulture	<i>Cathartes aura</i>	0	0	0	0	0	1	1	0	0	1	1	1	NT	
Andean Condor	<i>Vultur gryphus</i>	0	0	0	0	1	0	0	0	0	0	0	0		
King Vulture	<i>Sarcorampus papa</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Hook-billed Kite	<i>Chondrohierax uncinatus</i>	1	1	1	0	0	0	1	1	1	0	0	0		
American Swallow-tailed Kite	<i>Elanoides forficatus</i>	1	0	1	0	0	1	1	1	0	0	0	0		
Plumbeous Kite	<i>Ictinia plumbea</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Sharp-shinned Hawk	<i>Accipiter striatus</i>	1	0	1	0	0	1	1	1	1	0	0	0		
Solitary Eagle	<i>Harpyhaliaetus solitarius</i>	1	0	0	0	0	1	0	0	0	0	0	0		
Roadside Hawk	<i>Buteo magnirostris</i>	0	1	1	0	0	1	1	1	0	0	0	0		
White-rumped Hawk	<i>Buteo leucorhous</i>	0	0	1	0	0	0	1	1	0	0	0	0		
Red-backed Hawk	<i>Buteo polyosoma</i>	0	0	0	0	0	0	0	0	0	0	0	0		
Puna Hawk	<i>Buteo poeclochrous</i>	0	0	0	0	1	0	0	0	0	0	0	1		
Black-and-chestnut Eagle	<i>Oroaetus isidori</i>	0	0	0	0	0	0	1	0	0	0	0	0		
Mountain Caracara	<i>Phalacroboenus megalopterus</i>	0	0	0	0	1	0	0	0	0	1	1	0		
Barred Forest-falcon	<i>Micrastur ruficollis</i>	0	1	0	0	0	1	1	1	0	0	0	0		20 (15)
Bat Falcon	<i>Falco ruficularis</i>	0	0	1	0	0	0	1	1	0	0	0	0		
Speckled Chachalaca	<i>Ortalis guttata</i>	0	0	1	1	0	0	1	1	0	0	0	0		
Andean Guan	<i>Penelope montagnii</i>	1	1	1	0	0	0	1	1	1	0	0	0		
Blue-throated Piping-guan	<i>Pipile cumanensis</i>	0	0	0	0	0	1	0	0	0	0	0	0		
Stripe-faced Wood-quail	<i>Odontophorus balliviani</i>	1	1	0	0	1	0	1	1	1	1	0	0	EBA 55, MM	33 (30)

Appendix. Continued

English name	Latin name	Habitats				Altitudes					Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34			34+
Sunbittern	<i>Eurypyga helias</i>	0	0	0	0	0	0	1	0	0	0	0	21 (12)
Andean Lapwing	<i>Vanellus splendens</i>	0	0	0	0	1	0	0	0	0	0	1	
Spotted Sandpiper	<i>Actitis macularia</i>	0	0	0	0	0	1	0	0	0	0	0	
Andean Snipe	<i>Gallinago jamesoni</i>	0	0	0	0	1	0	0	0	1	0	0	
Grey-breasted Seedsnipe	<i>Thinocorus orbignyianus</i>	0	0	0	0	1	0	0	0	0	1	0	
Andean Gull	<i>Larus serranus</i>	0	0	0	0	1	0	0	0	0	0	1	
Band-tailed Pigeon	<i>Columba fasciata albilinea</i>	1	1	1	0	0	0	1	1	1	0	0	32.5 (30)
Plumbeous Pigeon	<i>Columba plumbea</i>	1	1	1	1	0	1	1	0	0	0	0	25.5 (16)
Picui Ground-dove	<i>Columbina picui</i>	0	0	0	0	0	0	1	0	0	0	0	
Grey-fronted Dove	<i>Leptotila rufaxilla</i>	0	0	0	0	0	1	0	0	0	0	0	
White-throated Quail-dove	<i>Geotrygon frenata</i>	0	0	0	0	0	0	1	1	1	0	0	IND-MM
Mitred Parakeet	<i>Aratinga mitrata</i>	0	0	0	0	0	1	0	0	0	0	0	
Green-cheeked Parakeet	<i>Pyrrhura molinae</i>	1	1	1	0	0	1	1	1	1	0	0	
Barred Parakeet	<i>Bolborynchus lineola</i>	0	1	0	0	0	0	0	1	1	0	0	
White-bellied Parrot	<i>Pionites leucogaster</i>	0	0	0	0	0	0	1	0	0	0	0	
Blue-headed Parrot	<i>Pionus menstruus</i>	0	0	0	0	0	0	1	0	0	0	0	26 (24)
Red-billed Parrot	<i>Pionus sordidus</i>	1	1	0	0	0	0	1	0	0	0	0	
Plum-crowned Parrot	<i>Pionus tumultuosus</i>	0	1	1	0	0	1	1	1	0	0	0	
Scaly-naped Parrot	<i>Amazona mercenaria</i>	0	0	0	0	0	1	1	1	1	0	0	24 (23)
Squirrel Cuckoo	<i>Piaya cayana</i>	1	1	1	1	0	1	1	0	0	0	0	
Smooth-billed Ani	<i>Crotophaga ani</i>	0	0	0	0	0	0	1	0	0	0	0	
Pavonine Cuckoo	<i>Dromococcyx paoninus</i>	0	1	0	0	0	0	0	1	0	0	0	19 (05)
Cloud-forest Screech-owl	<i>Otus marshalli</i>	1	1	0	0	0	0	1	0	0	0	0	Bol
Rufescent Screech-owl	<i>Otus ingens</i>	1	1	1	0	0	0	1	1	1	0	0	22 (14)
White-throated Screech-owl	<i>Otus albobularis</i>	1	1	0	0	0	0	1	1	0	0	0	
Band-bellied Owl	<i>Pulsatrix melanota</i>	1	0	0	0	0	0	1	1	0	0	0	
Rufous-banded Owl	<i>Ciccaba albitarsus</i>	1	1	0	0	0	0	1	0	0	0	0	33 (30)
Yungas Pygmy-owl	<i>Glaucidium boltonianum</i>	0	0	1	0	0	0	1	0	1	0	0	
Rufous-bellied Nighthawk	<i>Lurocalis rufiventris</i>	0	0	0	0	0	0	1	0	0	0	0	IND-MM
Band-winged Nightjar	<i>Caprimulgus longirostris</i>	0	E	0	0	0	0	0	0	0	0	1	

Appendix. Continued

English name	Latin name	Habitats					Altitudes					Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+			
Swallow-tailed Nighthjar	<i>Uropsalis segmentata</i>	0	0	0	0	0	0	1	0	0	0	0	0	21 (23)
Chestnut-collared Swift	<i>Streptoprocne rutila</i>	0	0	0	0	0	0	1	1	0	0	0	0	
White-collared Swift	<i>Streptoprocne zonaris</i>	0	0	0	0	0	1	1	1	0	0	0	0	
<i>Chaetura</i> sp.	<i>Chaetura</i> sp.	0	0	0	0	0	1	1	0	0	0	0	0	
Great-billed Hummingbird	<i>Phaethornis malaris</i>	0	0	0	0	0	0	0	0	0	0	0	0	
Green Violetear	<i>Colibri thalassinus</i>	0	1	1	1	0	0	1	1	0	0	0	0	
Sparkling Violetear	<i>Colibri coruscans</i>	0	1	0	0	0	0	1	0	0	0	0	0	
Blue-tailed Emerald	<i>Chlorostilbon mellisugus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Fork-tailed Woodnymph	<i>Thalurania furcata</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Golden-tailed Sapphire	<i>Chrysura oenone</i>	0	0	0	0	1	0	0	0	0	0	0	0	
Speckled Hummingbird	<i>Adelomyia melanogenys</i>	1	1	1	1	0	0	1	0	0	0	0	0	IND-MM
Giant Hummingbird	<i>Patagonia gigas</i>	0	0	0	1	0	0	0	0	0	0	1	0	36
Black-hooded Sunbeam	<i>Aglaeactis pamela</i>	0	E	0	0	0	0	0	0	0	1	0	0	EBA 55
Great Sapphirewing	<i>Pterophanes cyanopterus</i>	0	0	0	0	0	0	0	0	0	1	1	0	IND-MM
Bronzy Inca	<i>Coeligena coeligena</i>	0	1	0	0	0	0	0	1	0	0	0	0	
Collared Inca	<i>Coeligena torquata</i>	0	1	0	0	0	0	0	1	0	0	0	0	
Violet-throated Starfrontlet	<i>Coeligena violifer</i>	0	1	1	0	0	0	0	1	0	0	0	0	IND-UM
Sword-billed Hummingbird	<i>Ensifera ensifera</i>	1	1	0	0	0	0	1	0	0	0	0	0	IND-UM
Amethyst-throated Sunangel	<i>Helianthus amethysticollis</i>	0	1	1	1	0	0	1	1	1	0	0	0	IND-UM
Booted Racket-tail	<i>Ocreatus underwoodii</i>	0	1	0	0	0	0	1	0	0	0	0	0	
Tyrian Metaltail	<i>Metallura tyrianthina</i>	0	1	0	1	0	0	1	1	1	0	0	0	
Rufous-capped Thornbill	<i>Chalcostigma ruficeps</i>	0	0	0	1	0	0	1	0	0	0	0	0	
Long-tailed Sylph	<i>Aglaiocercus kingi</i>	0	1	1	0	0	0	1	0	0	0	0	0	
White-bellied Woodstar	<i>Chaetocercus mulsant</i>	0	1	1	0	0	0	1	0	0	0	0	0	
Crested Quetzal	<i>Pharomachrus antisthanus</i>	1	1	1	0	0	0	1	1	0	0	0	0	IND-UT
Golden-headed Quetzal	<i>Pharomachrus auriceps</i>	1	1	1	0	0	0	1	0	0	0	0	0	IND-UT
Masked Trogon	<i>Trogon personatus</i>	1	1	1	1	0	0	1	1	0	0	0	0	IND-UT
Blue-crowned Trogon	<i>Trogon curucui</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Broad-billed Motmot	<i>Electron platyrhynchum</i>	0	0	0	0	0	0	1	0	0	0	0	0	
Blue-crowned Motmot	<i>Momotus momota</i>	0	0	0	0	0	0	1	0	0	0	0	0	

Appendix. Continued

English name	Latin name	Habitats				Altitudes						Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+			
Ringed Kingfisher	<i>Ceryle torquata</i>	0	0	0	0	0	1	1	0	0	0	0	0	
Black-streaked Puffbird	<i>Malacoptila fulvogularis</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Versicoloured Barbet	<i>Eubucco versicolor</i>	1	1	1	0	0	0	1	0	0	0	0	0	23 (20)
Chestnut-tipped Toucanet	<i>Aulacorhynchus derbianus</i>	1	0	0	0	0	1	0	0	0	0	0	0	
Blue-banded Toucanet	<i>Aulacorhynchus coeruleicinctis</i>	1	1	0	0	0	1	1	1	1	0	0	0	IND-MM
Chestnut-eared Aracari	<i>Pteroglossus castanotis</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Hooded Mountain-toucan	<i>Andigena cucullata</i>	0	1	0	0	0	0	1	1	1	1	0	0	NT, EBA 55
Channel-billed Toucan	<i>Ramphastos vitellinus</i>	1	1	0	0	0	1	1	1	0	0	0	0	
White-throated Toucan	<i>Ramphastos tucanus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Yellow-tufted Woodpecker	<i>Melanerpes cruentatus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Bar-bellied Woodpecker	<i>Veniliomis nigriceps</i>	1	1	1	0	0	0	1	1	1	0	0	0	
Smoky-brown Woodpecker	<i>Veniliomis fumigatus</i>	0	1	1	0	0	0	1	1	0	0	0	0	
Crimson-mantled Woodpecker	<i>Piculus ritoolii</i>	0	1	0	0	0	0	1	1	1	0	0	0	
Andean Flicker	<i>Colaptes rupicola</i>	0	0	0	0	1	0	0	0	1	1	0	1	
Lineated Woodpecker	<i>Dryocopus lineatus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Red-necked Woodpecker	<i>Campephilus rubricollis</i>	1	1	1	0	0	1	1	1	0	0	0	0	
Plain-brown Woodcreeper	<i>Dendrocincla fuliginosa</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Olivaceous Woodcreeper	<i>Sittasomus griseicapillus</i>	1	1	1	0	0	1	1	1	0	0	0	0	
Amazonian Barred Woodcreeper	<i>Dendrocolaptes certhia</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Strong-billed Woodcreeper	<i>Xiphocolaptes promeropirhynchus</i>	1	1	1	0	0	1	1	1	1	1	0	0	IND-MM
Black-banded Woodcreeper	<i>Dendrocolaptes picumnus</i>	1	1	1	0	0	0	1	1	0	0	0	0	
Ocellated Woodcreeper	<i>Xiphorhynchus ocellatus</i>	0	1	0	0	0	1	1	1	0	0	0	0	IND-UT
Buff-throated Woodcreeper	<i>Xiphorhynchus guttatus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Olive-backed Woodcreeper	<i>Xiphorhynchus triangularis</i>	1	1	1	1	0	0	1	1	0	0	0	0	IND-UT
Montane Woodcreeper	<i>Lepidocolaptes lacrymiger</i>	1	1	1	0	0	1	0	1	1	1	0	0	38
Bar-winged Cinclodes	<i>Cinclodes fuscus</i>	0	0	0	0	1	0	0	0	0	0	0	1	
Black-throated Thistletail	<i>Schizoeaca harterti</i>	0	0	E	1	0	0	0	1	1	0	0	0	EBA 55
Cabanis' Spinetail	<i>Synallaxis cabanisi</i>	0	0	1	0	0	0	0	1	0	0	0	0	
Azara's Spinetail	<i>Synallaxis azarae</i>	E	1	1	1	0	0	1	1	1	0	0	0	18 (13)
Ash-browed Spinetail	<i>Cranioleuca curtata</i>	E	0	1	1	0	1	1	1	0	0	0	0	

Appendix. Continued

English name	Latin name	Habitats						Altitudes					Status	Range extension
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+			
Light-crowned Spintail	<i>Cranioleuca albiceps</i>	0	0	0	0	1	0	1	1	1	0	0	EBA 55, BB	
Puna Canastero	<i>Asthenes sclateri</i>	0	0	0	0	0	0	0	0	0	0	1	NT, EBA 56	
Line-fronted Canastero	<i>Asthenes urubambensis</i>	0	0	0	0	1	0	0	0	1	0	0		
Spotted Barbrail	<i>Premnoplex brunneus</i>	1	1	1	0	0	0	1	0	0	0	0	IND-UM	
Pearled Treerunner	<i>Margaromys squamiger</i>	1	1	1	1	0	0	1	1	1	0	0		32 (31)
Streaked Tuftedcheek	<i>Pseudocolaptes boissonneautii</i>	1	1	1	0	0	0	1	1	1	0	0	IND-UT	
Buff-browed Foliage-gleaner	<i>Syndactyla rufosuperciliata</i>	0	1	1	1	0	0	1	0	0	0	0	IND-UT	
Montane Foliage-gleaner	<i>Anabacerthia striaticollis</i>	1	1	1	1	0	0	1	1	0	0	0	IND-UT	29.5 (26)
Buff-fronted Foliage-gleaner	<i>Philydor rufum</i>	0	1	0	0	0	1	1	0	0	0	0		22 (18)
Buff-throated Foliage-gleaner	<i>Automolus ochrolaemus</i>	0	1	0	0	0	1	0	0	0	0	0	IND-MM	
Striped Treehunter	<i>Thripadectes holostictus</i>	1	1	1	0	0	0	1	0	0	0	0		
Streaked Xenops	<i>Xenops rutilans</i>	0	1	1	1	0	1	1	0	0	0	0		
Sharp-tailed Streamcreeper	<i>Lochmias nematura</i>	E	E	E	0	0	0	1	0	0	0	0		
Chestnut-backed Antshrike	<i>Thamnophilus palliatus</i>	0	0	0	1	0	1	1	0	0	0	0		
Plain-winged Antshrike	<i>Thamnophilus schistaceus</i>	0	0	0	0	0	1	0	0	0	0	0	EBA 54	
Upland Antshrike	<i>Thamnophilus aroyae</i>	0	1	1	0	0	1	1	0	0	0	0		
Variable Antshrike	<i>Thamnophilus caeruleus</i>	1	1	1	1	0	0	1	0	0	0	0		
Plain Antvireo	<i>Dysithamnus mentalis</i>	1	1	1	0	0	1	1	0	0	0	0	IND-UT	22 (20)
Stripe-chested Antwren	<i>Myrmotherula longicauda</i>	0	0	1	0	0	1	1	0	0	0	0		18 (13)
Yungas Antwren	<i>Myrmotherula grisea</i>	0	1	0	0	0	1	0	0	0	0	0	VU, EBA 54	
Rufous-winged Antwren	<i>Herpilochmus rufimarginatus</i>	0	0	0	0	0	1	0	0	0	0	0	IND-HT	
White-backed Fire-eye	<i>Pyriglena leuconota</i>	0	1	0	1	0	0	1	0	0	0	0	IND-HT	
Black-faced Antbird	<i>Mymoborus myotherinus</i>	0	0	0	0	0	1	0	0	0	0	0		
Chestnut-tailed Antbird	<i>Mymeciza hemimelaena</i>	0	0	0	0	0	1	0	0	0	0	0		
Black-faced Antthrush	<i>Formicarius analis</i>	0	0	0	0	0	1	0	0	0	0	0		
Short-tailed Antthrush	<i>Chamaeza campanisona</i>	1	1	1	1	0	0	1	0	0	0	0	IND-UT	
Barred Antthrush	<i>Chamaeza mollissima</i>	1	1	1	0	0	0	1	1	0	0	0	IND-MM	
Undulated Antpitta	<i>Grallaria squamigera</i>	0	1	0	0	0	0	0	0	0	1	0	IND-UM	
Scaled Antpitta	<i>Grallaria guatemalensis</i>	1	1	0	0	0	0	1	0	0	0	0	IND-UT	23 (15)
White-throated Antpitta	<i>Grallaria albigula</i>	1	1	1	1	0	0	1	0	0	0	0	EBA 54, MM	

Appendix. Continued

English name	Latin name	Habitats						Altitudes				Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+			
Rufous Antpitta	<i>Grallaria rufula</i>	1	1	0	1	0	0	1	1	1	0	0	IND-UM	
Rufous-faced Antpitta	<i>Grallaria erythrotis</i>	1	1	0	1	0	0	1	1	1	0	0	EBA 55, UM	33 (30)
Ochre-breasted Antpitta	<i>Grallaricula flavirostris</i>	1	1	1	0	0	0	1	0	0	0	0		
Slaty Gnateater	<i>Conopophaga ardesiaca</i>	E	1	1	0	0	0	1	0	0	0	0	IND-UT	
Unicolored Tapaculo	<i>Scytalopus parvirostris</i>	1	1	1	1	0	0	1	1	1	0	0		
Bolivian Tapaculo	<i>Scytalopus bolivianus</i>	1	1	1	0	0	1	1	0	0	0	0		
Puna Tapaculo	<i>Scytalopus simonsi</i>	0	0	0	0	1	0	0	0	1	1	0		
Diademed Tapaculo	<i>Scytalopus schulenbergi</i>	0	1	0	0	0	0	0	0	1	0	0	EBA 55	
Red-crested Cotinga	<i>Ampelion rubrocristata</i>	0	1	0	1	0	0	0	0	1	0	0		
Chestnut-crested Cotinga	<i>Ampelion rufaxilla</i>	1	1	1	0	0	0	1	1	1	0	0		29 (27)
Band-tailed Fruiteater	<i>Pipreola intermedia</i>	1	1	1	1	0	0	1	1	1	0	0		
Barred Fruiteater	<i>Pipreola arcuata</i>	1	1	0	0	0	0	1	1	1	0	0		
Scimitar-winged Pitha	<i>Lipaugus uropygialis</i>	1	1	0	0	0	0	1	0	0	0	0	VU EBA 55	
Amazonian Umbrellabird	<i>Cephalopterus ornatus</i>	0	0	1	0	0	0	1	0	0	0	0		
Andean Cock-of-the-rock	<i>Rupicola peruviana</i>	1	1	1	0	0	1	1	1	0	0	0	IND-UT	
Wing-barrèd Piprites	<i>Piprites chloris</i>	1	1	0	0	0	0	1	0	0	0	0		
Yungas Manakin	<i>Chiroxiphia bolitiana</i>	1	1	1	1	0	0	1	0	0	0	0	EBA 54, UT	
Round-tailed Manakin	<i>Pipra chloromeros</i>	0	0	0	0	0	1	0	0	0	0	0		
Streak-necked Flycatcher	<i>Mionectes striatocollis</i>	1	1	1	1	0	0	1	0	0	0	0		
Sepia-capped Flycatcher	<i>Leptopogon amaurocephalus</i>	0	0	0	0	0	1	0	0	0	0	0		
Slaty-capped Flycatcher	<i>Leptopogon superciliosus</i>	1	1	1	0	0	1	1	1	0	0	0	IND-UT	
Hazel-fronted Pygmy-tyrant	<i>Pseudotriccus simplex</i>	1	1	1	0	0	0	1	0	0	0	0	EBA 54, UT	25 (20)
White-bellied Pygmy-tyrant	<i>Myiornis albiventris</i>	1	0	0	0	0	0	1	1	0	0	0		19 (12)
Short-tailed Pygmy-tyrant	<i>Myiornis ecaudatus</i>	0	0	0	0	0	0	1	0	0	0	0		
Yungas Tody-tyrant	<i>Hemitriccus spodiosus</i>	0	1	1	1	0	0	1	0	0	0	0	EBA 54, BB	22 (16)
Black-throated Tody-tyrant	<i>Hemitriccus granadensis</i>	1	1	1	0	0	0	1	1	1	0	0		30 (28)
Ochre-faced Tody-flycatcher	<i>Todirostrum plumbeiceps</i>	0	0	0	1	0	0	1	0	0	0	0		
Golden-browed Tody-flycatcher	<i>Todirostrum chrysocrotaphum</i>	1	1	0	0	0	1	0	0	0	0	0		
Slater's Tyrannulet	<i>Phyllomyias sclateri</i>	0	1	1	0	0	1	1	0	0	0	0		
Bolivian Tyrannulet	<i>Zimmerius bolivianus</i>	1	1	1	1	0	0	1	0	0	0	0	EBA 54, MIM	



Appendix. Continued

English name	Latin name	Habitats					Altitudes					Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34	34+			
Southern Beardless Tyrannulet	<i>Camptostoma obsoletum</i>	0	1	0	0	0	1	0	0	0	0	0		
Forest Elaenia	<i>Myiopagis gaimardii</i>	0	0	0	0	0	1	0	0	0	0	0		
Yellow-bellied Elaenia	<i>Elaenia flavogaster</i>	0	0	E?	1	0	0	1	0	0	0	0		
White-crested Elaenia	<i>Elaenia albiceps</i>	0	0	1	1	0	0	1	0	0	0	0		
White-throated Tyrannulet	<i>Mecocerculus leucophrys</i>	1	1	1	1	0	0	1	1	1	0	0		
Buff-banded Tyrannulet	<i>Mecocerculus hellmayri</i>	1	1	0	0	0	1	1	0	0	0	0		
White-banded Tyrannulet	<i>Mecocerculus stictopterus</i>	0	1	0	0	0	0	1	0	1	0	0	IND-UM	
Torrent Tyrannulet	<i>Serpophaga cinerea</i>	0	0	0	1	0	1	1	0	0	0	0		
White-bellied Tyrannulet	<i>Serpophaga munda</i>	0	0	0	0	0	0	0	0	0	0	0		
Marble-faced Bristle-tyrant	<i>Phylloscartes ophthalmicus</i>	1	1	1	1	0	1	1	0	0	0	0		
Mottled-cheeked Tyrannulet	<i>Phylloscartes ventralis</i>	0	1	1	1	0	0	1	0	0	0	0		
Fulvous-breasted Flatbill	<i>Rhynchocyclus fulvipectus</i>	0	1	0	0	0	0	1	0	0	0	0		21 (20)
Yellow-olive Flycatcher	<i>Tolmomyias sulphurescens</i>	0	1	1	0	0	1	1	0	0	0	0		23 (18)
Yellow-margined Flycatcher	<i>Tolmomyias assimilis</i>	0	0	0	0	0	1	0	0	0	0	0		
Unadorned Flycatcher	<i>Myiophobus inornatus</i>	1	1	1	0	0	0	1	0	0	0	0	EBA 54, UT	25.5 (20)
Cinnamon Flycatcher	<i>Pyrrhomyias cinnamomea</i>	E	E	E	0	0	0	1	1	1	0	0		
Olive Flycatcher	<i>Mitrephanes olivaceus</i>	1	1	1	0	0	0	1	0	0	0	0	IND-UT	23 (20)
Smoke-coloured Pewee	<i>Contopus fumigatus</i>	1	1	1	0	0	1	1	0	0	0	0		
Black Phoebe	<i>Sayornis nigricans</i>	0	0	0	0	0	1	1	0	0	0	0		
Slaty-backed Chat-tyrant	<i>Ochthoeca cinnamomeiventris</i>	1	1	1	0	0	0	1	1	1	0	0	IND-UM	
Crowned Chat-tyrant	<i>Ochthoeca spodiota</i>	0	1	0	0	0	0	0	0	1	0	0	IND-UM	
Golden-browed Chat-tyrant	<i>Ochthoeca pulchella</i>	1	1	1	1	0	0	1	1	1	0	0		31.5 (29)
Rufous-breasted Chat-tyrant	<i>Ochthoeca rufipectoralis</i>	0	1	0	0	0	0	0	0	1	0	0		
Brown-backed Chat-tyrant	<i>Ochthoeca fumicolor</i>	0	1	1	1	0	0	1	1	1	0	0		
D'orbigny's Chat-tyrant	<i>Ochthoeca oenanthoides</i>	0	1	0	1	0	0	0	0	1	0	0		
White-browed Chat-tyrant	<i>Ochthoeca leucophrys</i>	0	0	0	1	0	0	0	0	0	0	1		
Streak-throated Bush-tyrant	<i>Myiotheretes striatocollis</i>	0	0	0	1	0	0	1	0	0	0	0		
Rufous-bellied Bush-tyrant	<i>Myiotheretes fusciorfus</i>	1	1	0	0	0	0	1	1	1	0	0	EBA 55	32 (29)
Little Ground-tyrant	<i>Muscisaxicola fluviatilis</i>	0	0	0	0	0	0	1	0	0	0	0		

Appendix. Continued

English name	Latin name	Habitats				Altitudes				Status	Range extension		
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30			30-34	34+
Long-tailed Tyrant	<i>Colonia colonus</i>	0	0	0	1	0	0	1	0	0	0	0	20.5 (12)
Yellow-browed Tyrant	<i>Satrapa icterophrys</i>	0	0	0	1	0	1	1	0	0	0	0	
Bright-rumped Attila	<i>Attila spadiceus</i>	0	0	0	0	1	1	0	0	0	0	0	
Greyish Mourner	<i>Rhytipterna simplex</i>	0	0	0	0	0	1	0	0	0	0	0	
Thrush-like Schiffornis	<i>Schiffornis turdimus</i>	0	0	0	0	0	1	0	0	0	0	0	
Dusky-capped Flycatcher	<i>Myiarchus tuberculifer</i>	1	1	1	1	0	1	1	1	1	0	0	
Social Flycatcher	<i>Myiozetetes similis</i>	0	1	1	1	0	1	0	0	0	0	0	19 (10)
Piratic flycatcher	<i>Legatus leucophaius</i>	0	0	1	1	0	1	1	0	0	0	0	
Tropical Kingbird	<i>Tyrannus melancholicus</i>	0	0	1	1	0	1	1	0	0	0	0	
Golden-crowned Flycatcher	<i>Myiodinastes chrysocephalus</i>	1	1	1	0	0	1	0	1	0	1	0	30 (27.5)
Streaked Flycatcher	<i>Myiodinastes maculatus</i>	0	0	0	0	0	0	1	0	0	0	0	20.5 (15)
Great Kiskadee	<i>Pitangus sulphuratus</i>	0	0	0	1	0	0	1	0	0	0	0	
Chestnut-crowned Becard	<i>Pachyramphus castaneus</i>	0	0	1	0	0	0	1	0	0	0	0	19 (12)
Barred Becard	<i>Pachyramphus versicolor</i>	0	1	1	0	0	0	1	1	0	0	0	
Masked Tityra	<i>Tityra semifasciata</i>	0	1	1	0	0	0	1	0	0	0	0	22.5 (18)
Brown-bellied Swallow	<i>Notiochelidon murina</i>	0	0	0	1	0	0	1	0	0	1	0	
Blue-and-white Swallow	<i>Pygochelidon cyanoleuca</i>	0	0	0	1	0	1	0	0	0	0	1	37 (35)
Pale-footed Swallow	<i>Notiochelidon flavipes</i>	E	E	E	0	0	0	1	1	1	0	0	
Andean Swallow	<i>Stelgidopteryx andecola</i>	0	0	0	0	1	0	0	0	0	1	0	
Southern Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>	0	0	0	0	1	0	0	0	0	1	0	33.5 (20)
Paromo Pipit	<i>Anthus bogotensis</i>	0	0	0	0	1	0	0	0	1	0	0	
White-capped Dipper	<i>Cinclus leucocephalus</i>	0	0	0	0	0	0	1	0	0	0	0	
Fulvous Wren	<i>Cinnycerthia fulva</i>	1	1	0	0	0	0	1	0	0	0	0	IND-UM, BB
Sedge Wren (= Grass Wren)	<i>Cistothorus platensis</i>	0	0	0	1	0	0	0	0	0	1	0	
Moustached Wren	<i>Thryothorus genibarbis</i>	0	0	E	1	0	0	1	0	0	0	0	19 (15)
House Wren	<i>Troglodytes aedon</i>	0	0	1	1	0	1	1	0	0	0	0	
Mountain Wren	<i>Troglodytes solstitialis</i>	1	1	1	0	0	0	1	1	0	0	0	
Grey-breasted Wood-wren	<i>Hemicorhina leucophrys</i>	1	1	1	1	0	1	1	0	0	0	0	IND-UT
Scaly-breasted Wren	<i>Microcerculus marginatus</i>	0	0	0	0	0	0	1	0	0	0	0	

Appendix. Continued

English name	Latin name	Habitats					Altitudes					Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11–13	18–26	26–30	30–34	34+			
Andean Solitaire	<i>Myadestes ralloides</i>	1	1	1	0	0	0	1	1	0	0	0	0	28 (27)
White-eared Solitaire	<i>Entomolestes leucotis</i>	1	1	1	0	0	0	1	1	1	1	0	0	33 (28)
Spotted Nighthale-thrush	<i>Catharus dryas</i>	1	1	1	0	0	1	1	0	0	0	0	0	IND-UT
Chiguanco Thrush	<i>Turdus chiguanco</i>	0	0	0	1	0	0	1	0	0	0	0	0	
Great Thrush	<i>Turdus fuscater</i>	0	0	0	1	0	0	1	1	1	0	0	0	33 (28)
Glossy-black Thrush	<i>Turdus serranus</i>	0	1	1	0	0	0	1	1	1	1	0	0	
Slaty Thrush	<i>Turdus nigriceps</i>	0	0	1	0	0	0	1	0	0	0	0	0	
Creamy-bellied Thrush	<i>Turdus amaurochalinus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
White-necked Thrush	<i>Turdus albicollis</i>	0	1	0	0	0	0	1	0	0	0	0	0	
White-collared Jay	<i>Cyanolyca viridicyana</i>	1	1	1	1	0	0	1	1	1	1	0	0	
Purplish Jay	<i>Cyanocorax cyanomelas</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Green Jay	<i>Cyanocorax yncas</i>	1	1	1	1	0	0	1	0	0	0	0	0	
Red-eyed Vireo	<i>Vireo olivaceus</i>	0	1	0	0	0	1	1	0	0	0	0	0	
Brown-capped Vireo	<i>Vireo leucophrys</i>	1	1	1	0	0	0	1	0	0	0	0	0	
Dusky-capped Greenlet	<i>Hylophilus hypoxanthus</i>	0	0	0	0	0	1	0	0	0	0	0	0	
Olivaceous Siskin	<i>Carduelis olivacea</i>	0	E	1	1	0	0	1	0	0	0	0	0	
Yellow-bellied Siskin	<i>Carduelis xanthogastra</i>	0	0	1	1	0	0	1	0	0	0	0	0	
Tropical Parula	<i>Parula pitayumi</i>	1	1	1	0	0	0	1	0	0	0	0	0	
Masked Yellowthroat	<i>Geothlypis aequinoctialis</i>	0	0	0	1	0	1	1	0	0	0	0	0	
Slate-throated Redstart	<i>Myioborus miniatus</i>	1	1	1	0	0	1	1	0	0	0	0	0	
Brown-capped Redstart	<i>Myioborus bruniceps</i>	0	1	0	0	0	0	1	0	0	0	0	0	
Spectacled Redstart	<i>Myioborus melanocephalus</i>	1	1	1	0	0	0	1	1	1	1	0	0	32 (28)
Two-banded Warbler	<i>Basileuterus bivitatus</i>	0	0	1	0	0	1	1	0	0	0	0	0	
Pale-legged Warbler	<i>Basileuterus signatus</i>	1	1	1	0	0	0	1	1	1	0	0	0	IND-UP
Citrine Warbler	<i>Basileuterus luteoviridis</i>	1	1	1	0	0	0	1	1	1	1	0	0	IND-MM
Russet-crowned Warbler	<i>Basileuterus coronatus</i>	1	1	1	0	0	0	1	0	0	0	0	0	IND-UT
Three-striped Warbler	<i>Basileuterus tristriatus</i>	1	1	1	0	0	0	1	0	0	0	0	0	25.5 (22)
Riverbank Warbler	<i>Phacothlypis rivularis</i>	0	0	0	0	0	1	0	0	0	0	0	0	
White-browed Conebill	<i>Controstrum ferrugineiventre</i>	0	1	0	0	0	0	0	0	1	1	0	0	

Appendix. Continued

English name	Latin name	Habitats				Altitudes				Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30			30-34
Blue-backed Conebill	<i>Controstrum sitticolor</i>	0	1	1	0	0	0	0	1	1	0	
Capped Conebill	<i>Controstrum albifrons</i>	1	1	1	0	0	0	0	1	1	0	
Magpie Tanager	<i>Cissopis leveriana</i>	0	0	0	1	0	0	1	0	0	0	18 (14)
Grass-green Tanager	<i>Chloromis riefferii</i>	0	1	1	0	0	0	1	1	1	0	32 (29)
Common Bush-tanager	<i>Chlorospingus ophthalmiticus</i>	1	1	1	1	0	0	1	1	0	0	IND-UT
Yellow-whiskered Bush-tanager	<i>Chlorospingus parvirostris</i>	0	0	0	0	0	0	1	0	0	0	IND-MM
Orange-browed Hemispingus	<i>Hemispingus calophrys</i>	0	1	1	0	0	0	0	1	1	0	EBA 55, UM IND-BB
Superciliaried Hemispingus	<i>Hemispingus superciliaris</i>	0	1	1	0	0	0	0	1	1	0	IND-MM, BB
Black-eared Hemispingus	<i>Hemispingus melanotis</i>	E	E	E	0	0	0	1	0	0	0	
Three-striped Hemispingus	<i>Hemispingus trifasciatus</i>	0	1	1	0	0	0	0	0	1	0	
Rust-and-yellow Tanager	<i>Thlypopsis ruficeps</i>	1	1	1	1	0	0	1	1	1	0	
Slaty Tanager	<i>Creurgops dentata</i>	1	0	0	0	0	0	1	0	0	0	EBA 54
Yellow-crested Tanager	<i>Tachyphonus rufiventris</i>	0	1	1	0	0	1	1	0	0	0	25.5 (22) 22 (12)
Red-crowned Ant-tanager	<i>Habia rubica</i>	0	0	0	0	0	1	0	0	0	0	
White-winged Tanager	<i>Piranga leucoptera</i>	0	1	0	0	0	0	1	0	0	0	20.5 (10)
Silver-beaked Tanager	<i>Ramphocelus carbo</i>	0	0	1	1	0	1	1	0	0	0	
Palm Tanager	<i>Thraupis palmarum</i>	0	0	0	0	0	1	0	0	0	0	
Blue-capped Tanager	<i>Thraupis cyanocephala</i>	0	1	1	1	0	0	1	1	1	0	
Blue and Yellow Tanager	<i>Thraupis bonariensis</i>	0	0	0	1	0	0	1	0	0	0	
Hooded Mountain-tanager	<i>Buthraupis montana</i>	0	1	1	0	0	0	0	1	1	0	33.5 (32)
Scarlet-bellied Mountain-tanager	<i>Anisognathus igniventris</i>	0	1	1	0	0	0	0	1	1	0	IND-UM
Blue-winged Mountain-tanager	<i>Anisognathus somptuosus</i>	1	1	1	0	0	0	0	1	1	0	
Chestnut-bellied Mountain-tanager	<i>Delothraupis castaneiventris</i>	1	1	1	0	0	0	1	1	1	0	
Fawn-breasted Tanager	<i>Pipraeidea melanota</i>	1	1	1	0	0	1	1	0	1	0	
Golden-rumped Euphonia	<i>Euphonia cyanocephala</i>	0	1	1	0	0	0	1	0	0	0	
Bronze-green Euphonia	<i>Euphonia mesochrysa</i>	0	0	0	0	0	1	0	0	0	0	
Orange-bellied Euphonia	<i>Euphonia xanthogaster</i>	1	1	1	0	0	1	1	0	0	0	23 (20)
Rufous-bellied Euphonia	<i>Euphonia rufiventris</i>	0	0	0	0	0	1	0	0	0	0	
Blue-naped Chlorophonia	<i>Chlorophonia cyanea</i>	0	1	1	0	0	0	1	0	0	0	

Appendix. Continued

English name	Latin name	Habitats				Altitudes					Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11-13	18-26	26-30	30-34			34+
Orange-eared Tanager	<i>Chlorochrysa calliparaea</i>	0	0	0	0	0	0	1	0	0	0	0	
Paradise Tanager	<i>Tangara chilensis</i>	0	0	0	0	0	1	0	0	0	0	0	
Green-and-gold Tanager	<i>Tangara schrankii</i>	0	0	0	0	0	1	0	0	0	0	0	
Saffron-crowned Tanager	<i>Tangara xanthocephala</i>	1	1	1	0	0	0	1	1	1	0	0	
Yellow-bellied Tanager	<i>Tangara xanthogastra</i>	0	0	0	0	0	1	0	0	0	0	0	
Bay-headed Tanager	<i>Tangara gyrola</i>	0	0	0	0	0	1	0	0	0	0	0	
Golden-naped Tanager	<i>Tangara ruficervix</i>	1	1	0	0	0	0	1	1	1	0	0	
Blue-necked Tanager	<i>Tangara cyanicollis</i>	0	0	1	0	0	1	1	0	0	0	0	
Masked Tanager	<i>Tangara nigrocincta</i>	0	0	0	0	0	1	0	0	0	0	0	
Green-throated Tanager	<i>Tangara nigroviridis</i>	1	1	1	0	0	0	1	0	0	0	0	
Blue-and-black Tanager	<i>Tangara vassorii</i>	1	1	1	0	0	0	1	1	1	0	0	EBA 54
Straw-backed Tanager	<i>Tangara argyrofenges</i>	1	1	1	0	0	0	1	0	0	0	0	
Black-faced Dacnis	<i>Dacnis lineata</i>	0	0	0	0	0	1	0	0	0	0	0	
Blue Dacnis	<i>Dacnis cyana</i>	0	1	0	0	0	0	1	1	0	0	0	22 (10)
Purple Honeycreeper	<i>Cyanerpes caeruleus</i>	0	0	0	0	0	1	0	0	0	0	0	
Swallow Tanager	<i>Tersina viridis</i>	0	0	0	0	0	1	0	0	0	0	0	
Bananaquit	<i>Ceorba flavicola</i>	0	0	0	0	0	0	1	0	0	0	0	
Plushcap	<i>Catamblyrhynchus diadema</i>	0	0	0	0	0	0	0	0	1	0	0	IND-BB
Yellow-browed Sparrow	<i>Ammodramus aurifrons</i>	0	0	0	0	0	0	1	0	0	0	0	
Rufous-collared Sparrow	<i>Zonotrichia capensis</i>	0	0	0	0	0	0	0	0	0	1	0	
Pectoral Sparrow	<i>Arremon taciturnus</i>	0	0	0	0	0	1	0	0	0	0	0	
Plumbeous Sierra-Finch	<i>Phrygilus unicolor</i>	0	0	0	0	1	0	0	0	0	0	1	
Ash-breasted Sierra Finch	<i>Phrygilus plebejus</i>	0	0	0	0	1	0	0	0	0	0	1	
White-winged Diuca Finch	<i>Diuca speculifera</i>	0	0	0	0	1	0	0	0	0	0	1	
Bright-rumped Yellow-finch	<i>Sicalis uropygialis</i>	0	0	0	0	1	0	0	0	0	0	1	
Rufous-naped Brush-finch	<i>Atlapetes rufinucha</i>	E	E	E	1	0	0	1	1	1	1	0	32.5 (30)
Stripe-headed Brush-finch	<i>Buarremon torquatus</i>	0	1	0	1	0	0	1	1	0	0	0	
Moustached Flower-piercer	<i>Diglossa mystacalis</i>	0	0	0	1	0	0	0	0	0	1	0	
Grey-bellied Flower-piercer	<i>Diglossa carbonaria</i>	0	0	0	0	0	0	0	0	0	1	0	EBA 55, 56
Deep-blue Flower-piercer	<i>Diglossopsis glauca</i>	0	1	1	0	0	0	1	0	0	0	0	

Appendix. Continued

English name	Latin name	Habitats				Altitudes				Status	Range extension	
		Prim	Dist	Sec	Scr	Puna	11–13	18–26	26–30			30–34
Masked Flower-piercer	<i>Diglossopsis cyanea</i>	0	1	1	0	0	0	1	1	1	0	
All-black flower-piercer	<i>Diglossa</i> sp.	0	0	0	0	0	0	1	0	0	0	New?
Band-tailed Seedeater	<i>Catamenia analis</i>	0	0	0	0	0	1	0	0	0	0	
Black-backed Grosbeak	<i>Pheucticus aureoventris</i>	0	E	E	E	0	0	1	1	0	0	
Buff-throated Saltator	<i>Saltator maximus</i>	0	0	0	0	0	1	0	0	0	0	
Crested Oropendola	<i>Psarocolius decumanus</i>	1	1	1	0	0	1	1	0	0	0	21.5 (18)
Dusky-green Oropendola	<i>Psarocolius atrovirens</i>	1	1	1	0	0	1	0	0	0	0	
Russet-backed Oropendola	<i>Psarocolius angustifrons</i>	0	0	0	0	0	1	0	0	0	0	
Amazonian Oropendola	<i>Psarocolius bifasciatus</i>	0	0	0	0	0	1	0	0	0	0	
Yellow-rumped Cacique	<i>Cacicus cela</i>	0	0	0	0	0	1	0	0	0	0	
Southern Mountain-cacique	<i>Cacicus chrysonotus</i>	1	1	0	0	0	0	1	0	0	0	32 (30)
Yellow-billed Cacique	<i>Amblycercus holosericeus</i>	0	1	1	1	0	0	1	1	1	0	IND-BB
Giant Cowbird	<i>Molothrus oryzivorus</i>	0	0	0	0	0	1	1	0	0	0	
<b>TOTALS</b>	<b>339</b>	<b>109</b>	<b>169</b>	<b>141</b>	<b>75</b>	<b>18</b>	<b>129</b>	<b>211</b>	<b>83</b>	<b>75</b>	<b>15</b>	

**Habitats:** Prim, undisturbed primary forest; Dist, disturbed primary forest; Sec, secondary forest; Scr, Scrub; Puna, montane grassland. An E denotes that the species was predominantly associated with the habitat edge.

**Altitudes:** 11–13, 1,100 to 1,300 m, rapid assessment at the confluence with the Altamachi; 18–26, 1,800 to 2,600 m, full inventory in the valley of the Rio Pampa Grande; 26–30, 2,600 to 3,000 m, rapid assessment in the valley of the Rio Pampa Grande; 30–34, 3,000 to 3,400 m, rapid assessment in the valley of the Rio Pampa Grande; 34+, incidental records above the treeline.

**Status:** IND, indicator species of; UT, upper Tropical, Montane Evergreen Forest; MM, NT, near-threatened Mid-montane, Montane Evergreen Forest; UM, Upper Montane, Montane Evergreen Forest; HT, Hill Tropical, Humid Broadleaf Forest; BB, Bamboo Forest; VU, vulnerable; EBA#: a restricted-range species previously recorded in that EBA (see Introduction for EBA definitions).

**Range extensions:** Where inventory data represent an extension of previous known altitudinal range the first figure  $\times 100$  gives the new lowest (*Uropsalis segmentata*) or highest (all other species) altitude at which the species was found; the second figure in parentheses gives the previously published highest or lowest known altitude. Bol, new record for Bolivia; New?, possible new species to science.



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